

Your Ref: TP/IP/07242/2022
Our Ref : CI/TPD22003614/P

25th May 2022

Fatal Accident Investigation Team

Traffic Police Department
Singapore Police Force
10 Ubi Avenue 3
Singapore 408865

MECHANICAL INSPECTION REPORT OF MOTOR BUS PC 9002E

1. We refer to your request on 14th April 2022 to conduct a physical inspection of a motor bus bearing registration number PC 9002E (herein referred to as "**Motor Bus**"), which was involved in a fatal road traffic accident on 1st April 2022.
2. The objective of this inspection is to determine if there was any possible mechanical failure to the Motor Bus that may have contributed to the accident.
3. Following the request, we had carried out a physical inspection of the Motor Bus on 18th May 2022 at the premises of Traffic Police vehicle pound, 517 Airport Road Singapore 539942. We now set out below our observations and comments with respect to this inspection.

General Condition

4. The mileage of the Motor Bus at the time of our inspection was not able to be recorded as the whole dashboard including the odometer has been damaged by the accident.
5. The Motor Bus was observed to have sustained damages at its frontal, left and right portion. Its front windscreen, front bumper, front door, right and left body panels as well as its windscreens was observed to be damaged at time of our inspection.

Tyres and Wheel Rims

6. The condition of the Motor Bus 6 tyres was observed to be in serviceable condition. I did not find any tear, cut or burst mark(s) on the outer and the inner sidewalls as well as across the tread of the 6 tyres. The 6 tyres were also observed to be sufficiently inflated for vehicular operation. The tyre brand, tyre size and remaining tread depth of the 6 tyres were recorded as follows:-

Ling Long 295/80R22.5 (10.5mm)

Ling Long 295/80R22.5 (13.5mm)



Ling Long 295/80R22.5 (7.8mm)

Ling Long 295/80R22.5 (11.1mm)

7. The 6 tyres were observed to be wrapped around standard steel wheel rims that were found to be without any damage. See Photo 1 – 15 below

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Photo 1 shows the damaged instrument cluster. Therefore no mileage is recorded at the time of our inspection.



Photo 2 shows a close up view of the rear portion of the Motor Bus at the time of our inspection. The right portion of the Motor Bus was observed to have been unaffected by the accident.



Photo 3 shows a general view of the front body of the Motor Bus at the time of our inspection. The Motor Bus was observed to have sustained damages at its front windscreen, front bumper, front door, right & left body panels as well as its windscreens was observed to be damaged at time of our inspection.



Photo 4 shows a close up view of the front body of the Motor Bus at the time of our inspection. The Motor Bus was observed to have sustained damages at its front windscreen (circled) as a result of the accident.

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Photo 5 shows a close up view of the front body of the Motor Bus at the time of our inspection. The Motor Bus was observed to have sustained damages at its front bumper (circled) as a result of the accident.



Photo 6 shows a close up view of the front body of the Motor Bus at the time of our inspection. The Motor Bus was observed to have sustained damages at its front door (circled) as a result of the accident.

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Photo 7 shows a general view of the right side of the Motor Bus at the time of our inspection. The Motor Bus was observed to have sustained damages at its right body panels and windscreens as a result of the accident.



Photo 8 shows a close up view of the right side of the Motor Bus at the time of our inspection. The Motor Bus was observed to have sustained damages at its right body panels (yellow circle) and windscreens (red circle) as a result of the accident.

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Photo 9 shows a close up view of the right side of the Motor Bus at the time of our inspection. The Motor Bus was observed to have sustained damages at its right body panels (yellow circle) as a result of the accident.



Photo 10 shows a general view of the left side of the Motor Bus at the time of our inspection. The Motor Bus was observed to have sustained damages at its left body panels and windcreens as a result of the accident.



Photo 11 shows a close up view of the left side of the Motor Bus at the time of our inspection. The Motor Bus was observed to have sustained damages at its left body panels (yellow circle) and windscreens (red circle) as a result of the accident.



Photo 12 shows the condition of the front right tyre of the Motor Bus, which was observed to be in serviceable condition with remaining tread depth of approximately 11.1mm. The tyre was also observed to be sufficiently inflated for vehicular operation.

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Photo 13 shows the condition of the rear right tyre of the Motor Bus, which was observed to be in serviceable condition with remaining tread depth of approximately 7.8mm. The tyre was also observed to be sufficiently inflated for vehicular operation.



Photo 14 shows the condition of the rear right tyres of the Motor Bus, which were observed to be in serviceable condition with remaining tread depth of approximately 10.5mm. The tyres, which were wrapped around standard alloy wheel rims, were also observed to be sufficiently inflated for vehicular operation.



Photo 15 shows the condition of the front left tyre of the Motor Bus, which was observed to be in serviceable condition with remaining tread depth of approximately 13.5mm. The tyre was also observed to be sufficiently inflated for vehicular operation.

Engine Compartment & Operating Fluids

8. Upon examination of the various operational fluid of the Motor Bus, we had observed all the parts and components other than the engine compartment to be intact and unaffected by the accident. The engine oil and steering fluid were all found to be of sufficient level for operating purposes. Visually, there was also no contamination found to these fluids. However, the coolant was observed to be insufficient and the air in the air-brakes cylinder was unable to be viewed as the engine was not started and driver's dashboard was damaged as a result of the accident.
9. Further examination of the operational fluids revealed no sign(s) or indication(s) of fluid leakage and/or fluid stain within the other various fluids compartment of the Motor Bus.
10. Our subsequent checks on the underside of the Motor Bus visually, the various undercarriage components of the Motor Bus were observed to be intact and without any visible damage. See photo 16 – 20 below.

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Photo 16 shows a general view of the Motor Bus engine compartment. The various parts and components inside the engine compartment were unaffected by the accident. There was also no sign(s) or indication(s) of fluid leakage and/or fluid stain within the engine compartment.



Photo 17 shows checks being carried out to the engine coolant of the Motor Bus at the time of my inspection. The engine coolant was observed to be of insufficient level.

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Photo 18 shows the engine oil dipstick of the Motor Bus at the time of my inspection. The engine oil was observed to be of sufficient level and without any visible contamination.



Photo 19 shows the power steering fluid reservoir of the Motor Bus at the time of my inspection. The power steering fluid was observed to be of sufficient level (arrowed) and without any visible contamination.



Photo 20 shows the undercarriage of the Motor Bus, at the area where the engine housing and transmission housing are located. I did not find any sign(s) or indication(s) of fluid leak and/or fluid stain(s) on the underside of the Motor Bus.

Steering System & Braking System

11. The mechanical components of the Motor Bus's steering and braking system were all found to be visually intact and undamaged. Static test on the steering and braking system of the Motor Bus was not conducted as the engine was not started. Our visual examination of the various steering components which had included the rack and pinion, tie rods, tie rod ends, ball joints, brake hoses and air brake cylinder had revealed that these components were all generally in good condition.
12. The braking system of the Motor Bus was noted to be of a full air-assisted braking system. Briefly, in this system, compressed air is used to press onto the brake shoes (for drum brakes) or onto the brake pads (for disc brakes), through the respective braking mechanism, thus slowing the rotation of the wheels.

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13. Since the engine of the Motor Bus could not be started, I was not able to carry out test(s) on whether there was any leakage of compressed air that could have affected the braking efficiency of the Motor Bus. All the other air pipes, air brake cylinder and connecting valves had all appear to be in good general condition and securely fitted upon my visual examination of these parts. See photo 21 - 28 below.

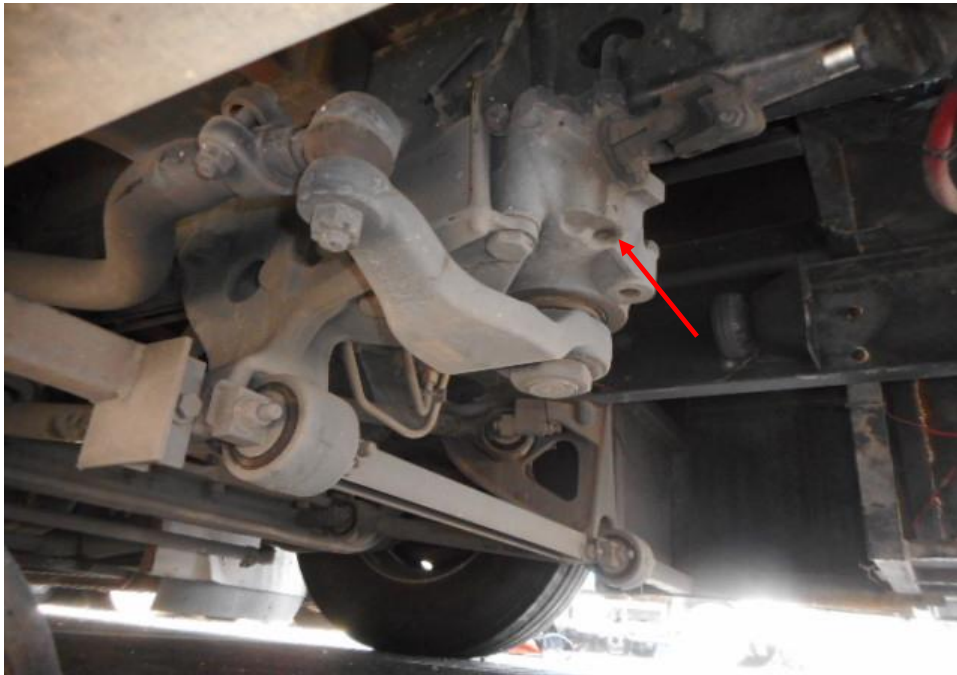


Photo 21 shows the steering box components (arrowed) of the Motor Bus's steering system. The steering system of the Motor Bus shows to be intact and not damaged by the accident.



Photo 22 shows the front right wheel components of the front steering system of the Motor Bus. The various undercarriage components of the Motor Bus were all observed to be intact and without any visible damage. This had included the steering rack and steering ball joints (arrowed) of the Motor Bus, which were observed to be securely attached to the front right wheel.



Photo 23 shows the front left wheel components of the front steering system of the Motor Bus. The various undercarriage components of the Motor Bus were all observed to be intact and without any visible damage. This had included the steering rack and steering ball joints (arrowed) of the Motor Bus, which were observed to be securely attached to the front left wheel.



Photo 24 shows the brake pipe (arrowed) at the front right wheel of the Motor Bus. I did not observe any leakage of brake fluid/air at the time of my inspection of the Motor Bus and the various mechanical components was observed to be intact.

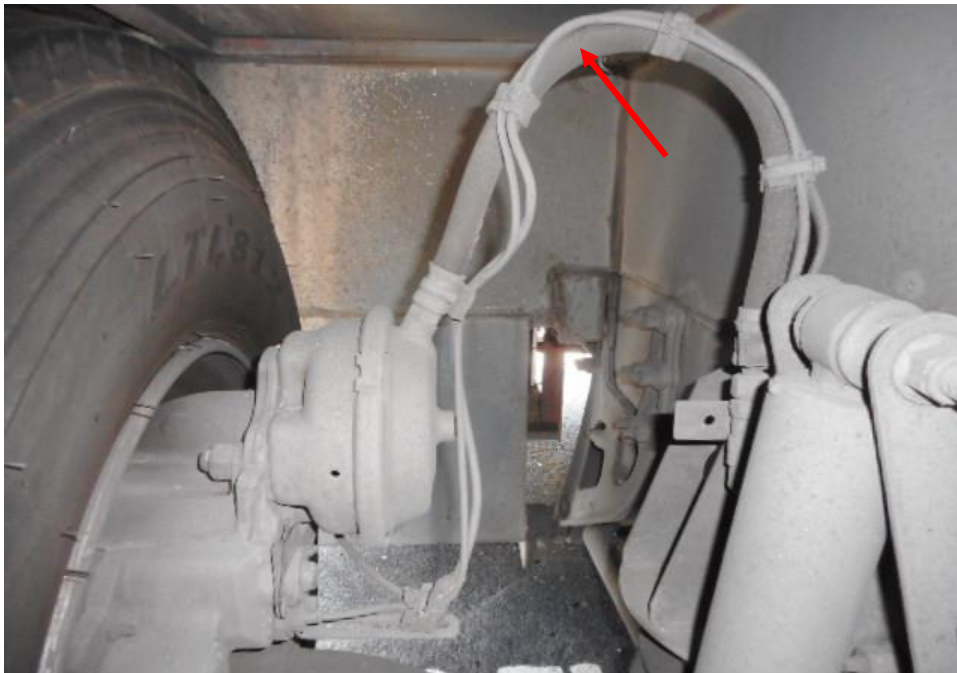


Photo 25 shows the brake pipe (arrowed) at the front left wheel of the Motor Bus. I did not observe any leakage of brake fluid/air at the time of my inspection of the Motor Bus and the various mechanical components was observed to be intact.



Photo 26 shows the brake pipe (arrowed) at the rear right wheel of the Motor Bus. I did not observe any leakage of brake fluid at the time of my inspection of the Motor Bus and the various mechanical components was observed to be intact.



Photo 27 shows the brake pipe (arrowed) at the rear left wheel of the Motor Bus. I did not observe any leakage of brake fluid at the time of my inspection of the Motor Bus and the various mechanical components was observed to be intact.



Photo 28 shows the air brake cylinders (arrowed) at the undercarriage of the Motor Bus. I did not observe any leakage of brake fluid at the time of my inspection of the Motor Bus and the various mechanical components was observed to be intact.

Electronic Safety / Operational indicators

14. The Motor Bus's automatic self-test of the functionality of its various electronic operating systems at the time of our inspection was not able to be recorded as the whole dashboard including the odometer has been damaged by the accident

Conclusion

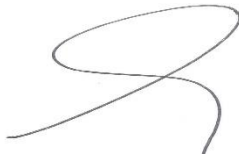
15. For this particular case, I was unable to determine whether there was any possible mechanical failure to the Motor Bus that may have contributed to the accident. The extent of damage that it had sustained had prevented me from Carrying out any operational test(s) and/or static test(s) to its engine system, transmission system, steering system, braking system and suspension system.
16. The 6 tyres fitted on the Motor Bus were also found to be in serviceable condition. I did not find any tear, cut or burst mark(s) on the outer and the inner sidewalls as well as across the tread of the Motor Bus 6 tyres. The 6 tyres of the Motor Bus were also observed to be sufficiently inflated for vehicular operation with remaining tread depth of approximately 7.8mm – 13.5mm.

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17. My findings were based solely on a static and visual inspection of the Motor Bus. No operational test(s) could be carried out to the Motor Bus as its engine could not be started at the time of my inspection as a result of the accident.



Sherwin Beh
Technical Investigator



Ang Bryan Tani
AMSOE, AMIRTE, AFF SAE, M.MATAI, AFF.Inst.AEA
Senior Technical Investigator
Technical Investigation & Reconstructionist (SAE-A)

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